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(*b*). *Report of M. Fouqué to the Eparch of Santorin, on the recent Volcanic Disturbances.*

[Translated from the French by the Assistant Secretary.]

M. FOUQUÉ, who was sent by the French Academy of Sciences in the spring of the present year, to observe the volcanic phenomena at Santorin, gave the general results of his investigation in the following Report to the Eparch of the island, at the request of that official:—

"You have expressed a desire to ascertain my impressions of the new volcano which has arisen in the harbour of Santorin, and of the dangers which it might cause to the population under your administration. I hasten to give you such information upon the subject as may interest you.

"The eruption which has occurred in the southern part of the island Neo Kaimene is extremely curious in a scientific point of view, but beyond this it contains nothing of great importance. Up to the present time its principal effect has been to augment the island of Neo Kaimene by two points of land some hundreds of yards in length. This enlargement of Neo Kaimene, added to a very slight sinking of the surface in the neighbourhood, is probably —after a short time has elapsed—all that will remain of an eruption which has alarmed the people to an unreasonable extent. The projections of cinders and stones have not been very great, except on one day, the 20th of February last; and although the outpourings of gas and vapour were abundant, I do not think that they were of a nature to cause much damage to the island of Santorin. Altogether, this eruption, compared to those of Vesuvius, and, above all, those of Etna, is almost insignificant; it is merely an eruption in miniature. I do not exaggerate when I say that the eruption of Etna last year was at least one hundred times more intense than the present one of Neo Kaimene; yet the vine-growers who cultivate the declivities of Etna did not for a moment think of leaving their houses. These general considerations will suffice to show you how exaggerated is the fear caused by this volcanic phenomenon in the harbour of Santorin, but I will give you positive proof of this statement.

"1stly, Whatever may be the theory entertained with regard to the causes of these phenomena, there is a general agreement among scientific men as to the fact that an eruption ceases to be alarming when the ground is widely opened, and the expansive matter imprisoned in the interior of the earth is able thus to find its way to the external air. It has been justly observed that volcanoes prevent earthquakes, and for this reason they have been compared to the safety-valves of locomotive engines. A volcano in activity is, therefore, a happy event for a country subject, as Greece is, to shocks of earthquake; and it is worthy of your notice that the last shocks experienced at Patras and at Tripolitza were hardly felt at all throughout the archipelago, that is to say, in the part which is more particularly protected by the proximity of the present eruption. At the southern end of Neo Kaimene there is a deep rent in the ground stretching between the new volcanic points (George and Aphroessa), and these two points themselves are nothing but the most open parts of this great fissure. Molten lava, torrents of aqueous vapour, volatile salts, and an extraordinary quantity of gases of different kinds issue from these vents. The communication between the atmosphere and the depths of the earth is thus perfectly established; and if there is not a regularly formed crater, this is owing solely to the small quantity of the substances thrown out, and to the feebleness of the eruption.

"2ndly, Owing to the progress made during the last ten years in the study of volcanoes, I am enabled to state that the eruption of Neo Kaimene has never shown more than a moderate intensity. In fact, an illustrious *savant* who occupies at the present moment, to its honour, a chair in the Academy of Sciences at Paris, and whose pupil I am—M. Ch. Ste. Claire Deville—has demonstrated that there exists a constant and certain relationship between the degree of intensity of an eruption and the nature of the gaseous elements which are ejected from the volcanic apertures. I have myself contributed to prove the truth of this remarkable law, and especially to fix its details. Now this law teaches us that in an eruption of maximum intensity, the predominant volatile product is chlorine of sodium, accompanied by others of soda and potassium; in those of the second degree we find that hydrochloric acid, and chlorine of iron predominate; in a third class of eruption hydrosulphuric acid and the salts of ammonia prevail; in the last class of all, we observe nothing but steam, carbonic acid, and combustible gases. It may be said, therefore, that complete eruptions are of four degrees of intensity. When a great eruption—like that of Vesuvius or Etna—follows in its ordinary decreasing march, it passes successively through these four different phases, in proportion as it becomes weaker and weaker; but there are volcanoes of less importance which never present the highest degree of volcanic activity, and whose manifestations do not pass the second or third degrees, or sometimes even the fourth degree of eruptive intensity. These are the less important in proportion as they stop short at a degree of less intensity. We have in this way a sure way of measuring the intensity of an eruption. Now, when we apply these principles to the present eruption of Neo Kaimene, we find that it has never gone beyond the third of these stages. At the time when it caused the greatest apprehensions it produced in notable quantities nothing but hydrosulphuric acid, aqueous vapour, and combustible gases, all of which are products of the third and fourth periods of volcanic activity. It is clear, therefore, on these considerations, that it has never displayed more than a moderate intensity. What I now say, concerning the small importance of this eruption, seems to be in contradiction to certain facts of a disastrous nature which have marked the course of the past month; I ought, therefore, to enter into some explanation on this subject before I conclude.

"On the 20th February, after a terrible detonation, an extraordinary quantity of incandescent fragments was ejected on all sides; a trading-vessel was burnt, the captain was killed by a stone, and the distinguished party of savans sent by the Greek Government to study the phenomena were nearly made victims of their zeal for science.

"Many days before this event, there had been warnings that the ground was about to open, and the gases enclosed under powerful pressure in the interior of the earth were probably ready to burst forth with violence as soon as a breach was effected. Nothing, therefore, could excuse the imprudence of the unfortunate captain in anchoring his vessel between Neo and Mikro Kaimene, almost at the foot of the George volcano, that is to say, at a point where the danger was very threatening. As to the members of the Greek commission, these gentlemen certainly knew the danger to which they were exposed; they faced it, fully aware of the possible consequences, in the desire to study in near proximity the terrible phenomena.

"There is now no danger of a similar kind to fear. The detonations, indeed, are still loud, but the ejections from the volcano present no longer any real peril; my companions and myself have been able to ascend, since the day of our arrival, the 8th of March, both George and Aphroessa many times; we have been able to walk in the midst of the flames which issue around Aphroessa, and to light paper at them; indeed, we have collected the gases which escape from the two eruption apertures without any accident having happened to any of us. The whole field of eruption can now be trodden over with impunity, except the two hollows of George and Aphroessa, where the temperature at present is too elevated.

"Such being the case, you may understand that there can be no inconvenience in vessels of any tonnage approaching and casting anchor on the bank situated on the east of Mikro Kaimene, in the harbour of Santorin. This lies at a distance of about 1200 mêtres from the nearest point of eruption. There has never been at this distance any danger whatever to fear, even when the accidents occurred near Neo Kaimene of which I have just spoken. I may add, that the depth and extent of this bank have not at all varied, neither has there been any alteration in the level of the ground at Mikro Kaimene, Paleo Kaimene, or in the whole northern part of Neo Kaimene. There is, therefore, no danger whatever to fear for the trading-vessels which resort to Santorin. As to the inhabitants of Santorin, their terrors are purely imaginary, their island has survived the grand catastrophe which produced the harbour between Santorin, Therasia, and Aspronisi, they may therefore reckon on its stability. Moreover, their island forms what has been called a "cone of elevation;" the Kaimenes, on the contrary, are what are called cones of eruption. Now all the conclusions of geological science tend to show that cones of elevation are, so to speak, invariable, whilst cones of eruption are liable to change in form and magnitude at each new eruption. The Kaimenes might, therefore, rise or sink, become larger or smaller, without the island of Santorin undergoing any change.

"In conclusion, I wish to say a word on another point. Are the emanations from the volcano likely to have any effect on the health of the inhabitants of Santorin? Will they affect the vegetation, and may they not injure the development of the vines on the island? It is impossible for me at the present moment to give a definite answer to these questions, which are the special study of one of my colleagues, M. de Coregna. But if I may judge by what occurs at Vesuvius, Etna, and Stromboli, whose slopes are thickly peopled and covered with vineyards, I should say that these emanations seem to have but a very feeble action on the health of men and plants; indeed, I should not be surprised to see the vine malady disappear from Santorin under the influence of the sulphurous emanations of the volcano.

"I may add, that all the opinions that I have here ventured to state, are shared in by the learned geologist, M. de Verneuil, who has accompanied me, and who has had the kindness to aid me in my work on the eruption of Neo Kaimene."

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3. *Notes on the Country at the head of the Gulf of Carpentaria.* By E. W. Lamb, Esq. Chief Commissioner of Crown Lands.

(Communicated by the Governor of Queensland, through the Colonial Office.)

The following paper was written in answer to a request from Sir Roderick Murchison to the Governor of Queensland, for detailed information respecting the progress of settlement in Northern Queensland, especially with reference to the possibility of depasturing sheep with profit so far within the tropics.

"Brisbane, January, 1866.

"It seems like a marvel, as we look back for a few short years and review the position of the territory now forming the colony of Queensland and compare it with its present state. A large portion was unknown, the small belts of country that surrounded the tracks of some of the intrepid Australian explorers on the maps of the continent gave little indication of the future suitability of the north for stock, beyond surmise which promised years for its realisation. Leichhardt could scarcely have conceived the changes that have followed his